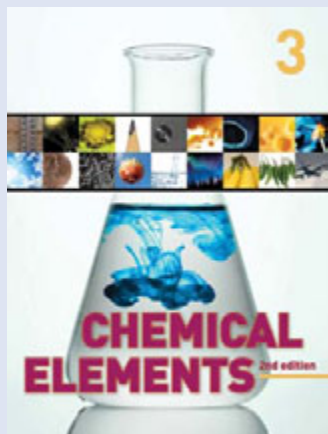



Chemical Elements: From Carbon to Krypton, 2nd Edition

A thorough and accessible source for students of chemistry



Chemical Elements: From Carbon to Krypton

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NEW EDITION U·X·L has fully updated this jewel of a reference work on the 112 known chemical elements, plus the recently-discovered elements 113 through 118.

Written especially for middle and high school students, *Chemical Elements* contains entries for aluminum, argon, boron, carbon, gold, hydrogen, krypton, lithium, mercury, nickel, platinum, potassium, radon, silicon, sodium, thallium, uranium, and the transfermium elements (those with atomic numbers greater than 100), among others.

Much information in *Chemical Elements* is often difficult for students and teachers to find.

STANDARD RUBRICS USED IN EACH ENTRY INCLUDE:

- Overview
- Discovery and Naming – how the element was discovered and by whom
- Physical Properties
- Chemical Properties

- Occurrence in Nature
- Isotopes
- Extraction
- Uses – including element's practical role in everyday life
- Compounds
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FULL-COLOR Actual entries are full color.



Aluminum alloys are used in the structural framing of buildings.

million metric tons of aluminum were produced in 1996 by this two-stage process.

Uses

Aluminum is used as pure metal, in alloys, and in a variety of compounds. An alloy is made by melting and then mixing two or more metals. The mixture has properties different from those of the individual metals. Aluminum alloys are classified in numbered series according to the other elements they contain.

The 1000 classification is reserved for alloys of nearly pure aluminum metal. They tend to be less strong than other alloys of aluminum, however. These metals are used in the structural parts of buildings, as decorative trim, in chemical equipment, and as heat reflectors.

The 2000 series are alloys of copper and aluminum. They are very strong, are corrosion (rust) resistant, and can be



Aluminum

Aluminum alloys are commonly used in everyday kitchen utensils.

machined, or worked with, very easily. Some applications of 2000 series aluminum alloys are in truck paneling and structural parts of aircraft.

The 3000 series is made up of alloys of aluminum and **manganese**. These alloys are not as strong as the 2000 series, but they also have good machinability. Alloys in this series are used for cooking utensils, storage tanks, aluminum furniture, highway signs, and roofing.

Alloys in the 4000 series contain silicon. They have low melting points and are used to make solders and to add gray coloring to metal. Solders are low-melting alloys used to join two metals to each other. The 5000, 6000, and 7000 series include alloys consisting of **magnesium**, both magnesium and silicon, and **zinc**, respectively. These are used in ship and boat production, parts for cranes and gun mounts, bridges, structural parts in buildings, automobile parts, and aircraft components.

The largest single use of aluminum is in the transportation industry (28 percent). Car and truck manufacturers like alu-

Students researching chemical elements, Bohr models and related topics will find all they need in *Chemical Elements*

SIDEBARS AND OTHER FEATURES

Sidebars spotlight well-known products containing the element, trivia on famous events relating to the element, definitions of difficult words and more. Other helpful features include: lists of further reading, a timetable of events, a glossary of terms, a general bibliography, periodic table endsheets and a general index. Adding to the book's appeal are 100 black-and-white illustrations and 150 color photos.

eBOOK FEATURES

The eBook version of *Chemical Elements* is fully searchable (keyword, article title, full-text, image captions) with other eBooks in the *Gale Virtual Reference Library* collection. Hyperlinks to individual entries will be provided from the table of contents, book index, list of illustrations and cross-references.



Most tubes are made from aluminum.

Aluminum and aluminum alloys because they are very strong, yet lightweight. Companies are using more aluminum products in electric cars. These cars must be lightweight in order to conserve battery power. General Motors, Ford, and Chrysler have all announced advanced new car designs in which aluminum products will be used more extensively. Aluminum producers also plan to make a wider variety of wheels for both cars and trucks.

Twenty-three percent of all aluminum produced finds its way into packaging. Aluminum foil, beer and soft drink cans, paint tubes, and containers for home products such as aerosol sprays are all made from aluminum.

Fourteen percent of all aluminum goes into building and construction. Windows and door frames, screens, roofing, and siding, as well as the construction of mobile homes and structural parts of buildings rely on aluminum.

The remaining 35 percent of aluminum goes into a staggering range of products, including electrical wires and appliances, automobile engines, heating and cooling systems, bridges, vacuum cleaners, kitchen utensils, garden furniture, heavy machinery, and specialized chemical equipment.

Description of an element's practical role in everyday life add to the relevance of *Chemical Elements*

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